LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the Application.

1.   **(Currently Amended)** A method for remote emissions sensing with NO_x detection capability comprising the steps of:

determining an occurrence of a predetermined triggering event;

~~taking~~ initiating an ambient reading of ambient NO_x concentration present prior to a vehicle passing by a system for remote emissions sensing, the initiation of the ambient reading being based on the determination of the occurrence of the predetermined triggering event;

taking an exhaust plume reading of an exhaust plume of the vehicle as the vehicle passes by the system for remote emissions sensing; and

subtracting the ambient ~~NO_x concentration~~ reading from the exhaust plume reading to provide a concentration reading for the NO_x present in the vehicle emissions.

2.   **(Currently Ammended)** The method of claim 1 further comprising the steps of taking a blocked beam reading prior to taking an exhaust plume reading and when the vehicle is in ~~the~~ a beam path of a source beam of the system.

3.   **(Cancelled)**

4.   **(Cancelled)**

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5.   **(Original)** The method of claim 2, wherein the blocked beam reading measures baseline current or noise in the system and wherein the blocked beam reading is taken after the ambient reading but before the exhaust plume reading.

6.   **(Currently Amended)** The method of claim 1, wherein a range of wavelengths over which readings are taken is selected to be substantially centered around a characteristic wavelength ~~is selected over which to take readings so~~ such that ~~the~~ a number of data points for which there is no significant NO_x absorption is minimized.

7.   **(Original)** The method of claim 1, further comprising the step of subtracting a baseline intensity from each exhaust plume reading to compensate for changes in radiation intensity.

8.   **(Currently Amended)** The method of claim ~~6~~ 7, wherein the baseline intensity is calculated using a substantially linear region over an absorption dip.

9.   **(Original)** The method of claim 2, wherein the ambient reading is taken just prior to the blocked beam reading.

10.   **(Currently Amended)** A system, having a source beam of radiation, for remote emissions sensing with NO_x detection capability comprising :

~~source beam of radiation;~~

means for determining an occurrence of a predetermined triggering event;

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a means for ~~taking~~ initiating an ambient reading of ambient NO_x concentration present prior to a vehicle passing by the system, the initiation of the ambient reading being based on the determination of the occurrence of the predetermined triggering event by the means for determining;

a means for taking an exhaust plume reading of an exhaust plume of a vehicle; and

a means for subtracting the ambient ~~NO_x concentration~~ reading from the exhaust plume reading.

11. **(Currently Amended)** The ~~A~~ system as claimed in claim 10 further comprising ~~a~~ means for taking a blocked beam reading when the vehicle is in ~~the~~ a beam path of the source beam; and

a means for subtracting the blocked beam reading from the exhaust plume reading.

12. **(Cancelled)**

13. **(Cancelled)**

14. **(Original)** The system of claim 11, wherein the blocked beam reading measures baseline current or noise in the system, and where the blocked beam reading is taken after the ambient reading but before the exhaust plume reading.

15.   (Currently Amended) The system of claim 10, wherein a range of wavelengths over which readings are taken is selected to be substantially centered around a characteristic wavelength is selected over which to take readings so such that the a number of data points for which there is no significant NO_x absorption is minimized.

16.   (Currently Amended) The system of claim 10, wherein changes in the an intensity of the source radiation beam are compensated by subtracting a baseline radiation intensity from each exhaust plume reading.

17.   (Original) The system of claim 16, wherein the baseline intensity is calculated using a substantially linear region over an absorption dip.

18.   (New) A method for remote emissions sensing with NO_x detection capability comprising the steps of:

taking an ambient reading of ambient NO_x concentration present prior to a vehicle passing by a system for remote emissions sensing;

taking an exhaust plume reading of an exhaust plume of the vehicle as the vehicle passes by the system for remote emissions sensing;

subtracting a baseline intensity from the exhaust plume reading to compensate for changes in radiation intensity, wherein the baseline intensity is calculated using a substantially linear region over an absorption dip; and

subtracting the ambient reading from the exhaust plume reading to provide a concentration reading for the NO_x present in the vehicle emissions.

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19.   (New) The method of claim 18 further comprising the steps of taking a blocked beam reading prior to taking an exhaust plume reading and when the vehicle is in a beam path of a source beam of the system.

20.   (New) The method of claim 19, wherein the ambient reading is taken at predetermined intervals and wherein a most recent ambient reading is stored and used in connection with the blocked beam and exhaust plume readings for each vehicle.

21.   (New) The method of claim 19, wherein the blocked beam reading measures baseline current or noise in the system and wherein the blocked beam reading is taken after the ambient reading but before the exhaust plume reading.

22.   (New) The method of claim 18, wherein the ambient reading is initiated at an occurrence of a predetermined trigger event.

23.   (New) The method of claim 18, wherein a range of wavelengths over which readings are taken is selected to be substantially centered around a characteristic wavelength such that a number of data points for which there is no significant NO_x absorption is minimized.

24.   (New) The method of claim 19, wherein the ambient reading is taken just prior to the blocked beam reading.

25.   **(New)** A system, having a source beam of radiation, for remote emissions sensing with NO_x detection capability comprising :

means for taking an ambient reading of ambient NO_x concentration present prior to a vehicle passing by the system;

means for taking an exhaust plume reading of an exhaust plume of a vehicle;

means for subtracting a baseline radiation intensity from the exhaust plume reading to compensate for changes in an intensity of the source beam of radiation, wherein the baseline intensity is calculated using a substantially linear region over an absorption dip; and

means for subtracting the ambient reading from the exhaust plume reading.

26.   **(New)** The system as claimed in claim 25 further comprising means for taking a blocked beam reading when the vehicle is in a beam path of the source beam; and

means for subtracting the blocked beam reading from the exhaust plume reading.

27.   **(New)** The system of claim 26, wherein the blocked beam reading measures baseline current or noise in the system, and where the blocked beam reading is taken after the ambient reading but before the exhaust plume reading.

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28.   **(New)** The system of claim 25, wherein a range of wavelengths over which readings are taken is selected to by substantially centered around a characteristic wavelength such that a number of data points for which there is no significant NO_x absorption is minimized.

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